

MALLA REDDY ENGINEERING COLLEGE (AUTONOMOUS)

SUBJECT: DATA STRUCTURES

Only for CSE

Year: I B.Tech II Semester (MR15) MID-II EXAM

MODULE-III

1. Queue is a _____ data structure []
 - a) linear
 - b) non linear
 - c) none
 - d) all

2. Queue follows _____ order []
 - a) FIFO list
 - b) LIFO list
 - c) Ordered list
 - d) linear list

3. In Queue insertion operation is done at _____ end []
 - a) rear
 - b) front
 - c) side
 - d) none

4. In Queue deletion operation is done at _____ end []
 - a) rear
 - b) front
 - c) side
 - d) none

5. In Queue insertion is known as _____ []
 - a) pop
 - b) enqueue
 - c) dequeue
 - d) push

6. In Queue deletion is known as _____ []

- a) pop
- b) enqueue
- c) dequeue
- d) push

7. Queue is used for implementing _____ []

- a) BFS
- b) DFS
- c) both
- d) none

8. In linked list implementation of a queue, where does a new element be inserted []

- a) At the head of link list
- b) At the tail of the link list
- c) At the centre position in the link list
- d) None

9. Applications of Queue are _____ []

- a) priority queue
- b) round robin algorithm
- c) sharing of resources
- d) all the above

10. In array implementation of Queue the overflow condition is _____ []

- a) $\text{rear} = \text{MAX} - 1$
- b) $\text{front} = -1$
- c) $\text{rear} = 0$
- d) $\text{front} = \text{MAX} - 1$

11. In array implementation of Queue the underflow condition is _____ []

- a) $\text{rear} = \text{MAX} - 1$
- b) $\text{front} = -1$
- c) $\text{rear} = 0$
- d) $\text{front} = \text{MAX} - 1$

12. In array implementation of Circular Queue the underflow condition is _____ []

- a) rear=MAX-1&&front=0
- b) (front=-1)
- c) rear=0
- d) front=MAX-1

13. In array implementation of Circular Queue the overflow condition is _____ []

- a) (rear=MAX-1&&front=0)||rear=front+1
- b) (front=-1||rear=front+1)
- c) rear=0
- d) front=MAX-1

14. If the characters 'D', 'C', 'B', 'A' are placed in a queue (in that order), and then removed one at a time, in what order will they be removed?

- a) ABCD
- b) ABDC
- c) DCAB
- d) DCBA

15. One difference between a queue and a stack is: []

- a) Queues require linked lists, but stacks do not.
- b) Stacks require linked lists, but queues do not.
- c) Queues use two ends of the structure; stacks use only one.
- d) Stacks use two ends of the structure, queues use only one.

16. To simulate people waiting in a line, which data structure would you use? []

- a) Vector
- b) Queue
- c) Stack
- d) Set

17. Queues and Stacks can be implemented using either arrays or linked lists. []

- a) true b) false

18. For a queue implemented as an array, the initial value of the front and rear is set to _____ []

- a) -1

- b)0
- c)1
- d)MAX-1

19. A _____ is a queue structure in which elements are inserted or deleted based on priority []

- a)Vector
- b)DeQueue
- c)Stack
- d)priority queue

20. In Queue insertion and deletion is done at one end called top. []

- a>true b>false

21. In an input restricted dequeue insertion can done at both the ends. []

- a>true b>false

22. In an output restricted dequeue insertion can done at both the ends. []

- a>true b>false

23. Which of the following is not a type of Dequeue? []

- a. Input Restricted Queue
- b. Output Restricted Queue
- c. both a and b
- d. None of the above

24. Which of the following operation can not be done in an output restricted dequeue []

- a)insertion from rear
- b)insertion from front
- c)deletion from rear
- d)deletion from front

25. Which of the following operation can not be done in an input restricted dequeue []

- a)insertion from rear
- b)insertion from front
- c)deletion from rear
- d)deletion from front

ANSWERS:

- | | | |
|-------|-------|------|
| 1) a | 11)b | 21)b |
| 2) a | 12)b | 22)a |
| 3) a | 13) a | 23)c |
| 4) b | 14)d | 24)c |
| 5) b | 15)c | 25)b |
| 6) c | 16)b | |
| 7) a | 17)a | |
| 8) b | 18)a | |
| 9) a | 19)d | |
| 10) a | 20)b | |

MODULE- IV

1. The operation of processing each element in the list is known as _____ []

- a) sorting
- b) merging
- c) inserting
- d) traversal

2. Which indicates pre-order traversal? []

- a) Left sub-tree, Right sub-tree and root
- b) Right sub-tree, Left sub-tree and root
- c) Root, Left sub-tree, Right sub-tree
- d) Right sub-tree, root, Left sub-tree

3. Binary trees with threads are called as _____ []

- a) Threaded trees
- b) Pointer trees
- c) Special trees

d) Special pointer trees

4. _____ data structure is used for BFS []

a) tree

b) graph

c) stack

d) queue

5. In Binary trees nodes with no successor are called _____ []

a) End nodes

b) Terminal nodes

c) Final nodes

d) Last nodes

6. _____ data structure is used for DFS []

a) tree

b) graph

c) stack

d) queue

7. Trees are said _____ if they are similar and have same contents at []

Corresponding nodes.

a) Duplicate

b) Carbon copy

c) Replica

d) Copies

8. Every node N in a binary tree T except the root has a unique parent []
called the _____ of N.

- a) successor
- b) Predecessor
- c) Forerunner
- d) Precursor

9. In a graph if $E=(u,v)$ means _____ []
a) u is adjacent to v but v is not adjacent to u

- b) e begins at u and ends at v
- c) u is processor and v is successor
- d) both b and c

10. Sequential representation of binary tree uses _____ []

- a) Array
- b) linked list
- c) both
- d) none

11. Which indicates post-order traversal? []

- a) Left sub-tree, Right sub-tree and root
- b) Right sub-tree, Left sub-tree and root
- c) Root, Left sub-tree, Right sub-tree
- d) Right sub-tree, root, Left sub-tree

12. TREE[root]=NULL indicates tree is _____

[]

a) Overflow

b) Underflow

c) Empty

d) Full

13. A binary tree whose every node has either zero or two children is called _____

[]

a) complete binary tree

b) binary search tree

c) strict binary tree

d) data structure

14. Adjacency list representation of graph is an example for _____

[]

a) singly linked list

b) circular linked list

c) multi list

d) none of the above

15. In a binary tree, nodes with 0 children are called _____

[]

a) Exterior node

b) Outside node

c) Outer node

d) External node

16. Other name for directed graph is _____ []

a) Direct graph

b) Digraph

c) Dir-graph

d) none of the above

17. In a graph if $e=[u,v]$, Then u and v are called _____ []

a) End points of e

b) Adjacent nodes

c) Neighbors

d) All of the above

18. Which indicates In-order traversal? []

a) Left sub-tree, Right sub-tree and root

b) Right sub-tree, Left sub-tree and root

c) Root, Left sub-tree, Right sub-tree

d) Left sub-tree, root, Right sub-tree

19. A terminal node in a binary tree is called _____ []

a) Root

b) Leaf

c) Child

d) Branch

20. In a binary tree, certain null entries are replaced by special pointers which point to nodes higher in the tree for efficiency. These special pointers are called_____ []

- a) Leaf
- b) branch
- c) path
- d) thread

21. If every node u in G is adjacent to every other node v in G , A graph is said to be___ []

- a) isolated
- b) complete
- c) finite
- d) Strongly connected

22. The number of external nodes in a full binary tree with n internal nodes is_____ []

- a) n
- b) $n+1$
- c) $2n$
- d) $2n + 1$

23. The number of external nodes in a binary tree with n internal nodes is_____ []

- a) 1
- b) n
- c) $n - 1$
- d) $n+1$

24. If a full binary tree T has I internal nodes, the total number of nodes is []

- a) $(I+1)/2$
- b) $2I+1$
- c) $I/2 - 1$
- d) $(I+1)/2 - 1$

25. In full binary search tree every internal node has exactly two children. If there are 100 leaf nodes in the tree, how many internal nodes are there in the tree? []

- a) 25
- b) 49
- c) 99
- d) 101

26. If a node having two children is to be deleted from binary search tree, it is replaced by its []

- a) Post-order predecessor
- b) In-order successor
- c) Pre-order predecessor
- d) None

27. In a full binary tree, every internal node has exactly two children. A full binary tree with $2n+1$ nodes contains []

- a) n leaf node
- b) n internal nodes
- c) $n-1$ leaf nodes
- d) $n-1$ internal nodes

28. Degree of a leaf node is _____ . []

- a) 0
- b) 1
- c) 2
- d) 3

29. The depth of root node is _____ . []

- a)0
- b)1
- c)2
- d)3

30. A binary tree of height h has at least $h+1$ nodes and at most _____ nodes. []

- a) $2h$
- b) $2h+1$
- c) $2^{(h+1)}$
- d) 2^h-1

31. Pre-order traversal is also called _____ . []

- a)Depth first
- b)Breadth first
- c)Level order
- d)In-order

32. A node is a parent if it has successor nodes. []

- a>true
- b>false

33. Total number of nodes at the n th level of a binary tree can be given as _____ []

- a) 2^n
- b) $2n$
- c) $2^{(n+1)}$
- d) $2^{(n-1)}$

34. Node that branch into child nodes are called parent nodes. []

- a)True
- b)False

35. The size of a tree is equal to the total number of nodes. []

- a) True
- b) False

36. A leaf node branch out further. []

- a) True
- b) False

37. A binary tree of no successors is called the root node. []

- a) True
- b) False

38. A binary tree of n nodes has exactly $n-1$ edges. []

- a) True
- b) False

39. Every node has a parent. []

- a) True
- b) False

40. Three standard ways of traversing a binary tree T with root R []

- a) Prefix, infix, postfix
- b) Pre-process, in-process, post-process
- c) Pre-traversal, in-traversal, post-traversal
- d) Pre-order, in-order, post-order

41. The internal path length of a binary tree is defined as the sum of all path lengths summed over each path from the root to an external node. []

- a) True
- b) False

42. In threaded binary tree _____ points to higher nodes in tree. []

- a) Info
- b) Root
- c) Threads
- d) Child

43. If T has a total of N nodes, the number of internal nodes is []

- a) $(N-1)/2$
- b) $2N+1$
- c) $N/2 - 1$
- d) $(N+1)/2 - 1$

44. Maximum number of nodes at the kth level of a binary tree is _____. []

- a) 2^k
- b) $2k$
- c) $2k+1$
- d) $2k-1$

45. A node is child node if out degree is one. []

- a) true
- b) false

46. Nodes at the same level that share the same parent are called _____. []

- a) sisters
- b) siblings
- c) parents
- d) brothers

47. Two binary trees are said to be copies if they have similar _____ and _____. []

- a) structure, data at corresponding nodes
- b) child, root
- c) type, no. of leafs
- d) none

48. _____ Is a directed tree in which outdegree of each node is less than or equal to two. []

- a) Unary tree
- b) Binary tree
- c) Trinary tree
- d) Both b and c

49. If node N is a terminal node in a binary tree then its _____. []

- a) Right tree is empty
- b) Left tree is empty
- c) Both left & right sub trees are empty
- d) Root node is empty

50. A graph is said to be _____ if its edges are assigned data. []

- a) Tagged
- b) Marked
- c) Lebeled
- d) Sticked

Answers:

1. a
2. c
3. a
4. d
5. b
6. c
7. d
8. b
9. d
10. a
11. a
12. c
13. c
14. c
15. d
16. b
17. d
18. d
19. b
20. d
21. b
22. b
23. d
24. b
25. c
26. b
27. b
28. a
29. a
30. b
31. a
32. a
33. a
34. a
35. a
36. b
37. b
38. a
39. b
40. d
41. b
42. c
43. a
44. a

- 45. b
- 46. b
- 47. a
- 48. b
- 49. c
- 50. c

MODULE V:

1. Which of the following is self-balancing Binary Search Tree []
 - A) Splay Tree
 - B) AVL Tree
 - C) Red Black Tree
 - D) All of the above

2. Which of the following is true about Red Black Trees? []
 - a) The path from the root to the furthest leaf is no more than twice as long as the path from the root to the nearest leaf
 - b) At least one children of every black node is red
 - c) Root may be red
 - d) A leaf node may be red

3. In a binary search tree, all of the items in the left subtree of a given node are []
 - a) less than the item in the node
 - b) greater than the item in the node
 - c) none of the above
 - d) both A&B

4. In a binary search tree, all of the items in the right subtree of a given node are []
 - a) less than the item in the node
 - b) greater than the item in the node
 - c) none of the above

d) both A&B

5. In the array representation of a binary search tree, an item's left child is

Found by []

a) multiplying array index by 2

b) dividing array index by 2

c) adding array index by 2

d) none of the above

6. In the array representation of a binary search tree, if array index is represented as i , then an item right child is found by []

a) $2*i$

b) $2*i+1$

c) $2/i$

d) $2/i-1$

7. A full binary tree with $2n+1$ nodes contain []

A) n leaf nodes

B) n non-leaf nodes

C) $n-1$ leaf nodes

D) $n-1$ non-leaf nodes

8. A BST is traversed in the following order recursively: left, root, right

The output sequence will be in []

A) Ascending order

B) Descending order

C) Bitomic sequence

D) No specific order

9. The pre-order and post order traversal of a Binary Search Tree generates the same output. The tree can have maximum []

- A) Three nodes
- (B) Two nodes
- C) One node
- D) Any number of nodes

10. While constructing a binary search tree from list of numbers we will consider the root node as []

- a)first value from the list
- b)middle value from the list
- c)last value from the list
- d)second last value from the list

11. _____ is a self balancing binary search tree []

- a) AVL tree
- b) binary tree
- c)tries
- d)subtree

12.In an AVL tree a node is said to be height balanced if it has balancing factor of _____ []

- a)-1
- b)0
- c)1
- d)all the above

13.The term balancing factor is associated with _____ tree []

- a) AVL tree
- b) binary tree
- c)tries

d) subtree

14. When the left subtree of the AVL tree is one level higher than that of right subtree, then the

Balancing factor is _____ []

a) -1

b) 0

c) 1

d) all the above

15. When the right subtree of the AVL tree is one level higher than that of left subtree, then

Balancing factor is _____ []

a) -1

b) 0

c) 1

d) all the above

16. In a Red Black tree color of root node is always black

[]

a) True

b) false

17. Which of the following rotation is not associated with AVL tree insertion

Operation []

a) RL rotation

b) LL rotation

c) LL rotation

d) RL rotation

18. In a Red Black tree all leaf nodes are red

[]

a) True

b) false

19. Recently accessed element can be re-accessed fastly in _____

[]

A) Splay Tree

- B) AVL Tree
- C) Red Black Tree
- D) All of the above

20. zig zag rotation is associated with _____ []

- A) Splay Tree
- B) AVL Tree
- C) Red Black Tree
- D) All of the above

21. _____ tree is known as height balanced tree []

- A) Splay Tree
- B) AVL Tree
- C) Red Black Tree
- D) All of the above

22. _____ tree is known as symmetric binary B tree []

- A) Splay Tree
- B) AVL Tree
- C) Red Black Tree
- D) All of the above

23. In a Red Black tree some of the leaf nodes can be red []

- a) True
- b) false

24. RL rotation is done when the new node is inserted in the right subtree of the right subtree of the critical node []

- a) True
- b) false

25. RR rotation is done when the new node is inserted in the right subtree of the right subtree of the critical node []

- a) True
- b) false

26.LR rotation is done when the new node is inserted in the right subtree of the left subtree of the critical node []

- a) True
- b)false

27.LL rotation is done when the new node is inserted in the right subtree of the left subtree of the critical node []

- a) True
- b)false

28.When a node N is accessed it is splayed to make it as the []

- a)Root node
- b)Parent node
- c)Sibling Node
- d)child node

29.Which rotation is done when new node is inserted in the right sub-tree of the right sub- tree of the critical node []

- a)RL rotaion
- b) LL rotaion
- c) LR rotaion
- d) RR rotaion

30.Which rotation is done when new node is inserted in the right sub-tree of the left sub- tree of the critical node []

- a)RL rotaion
- b) LL rotaion
- c) LR rotaion
- d) RR rotaion

31. Which rotation is done when new node is inserted in the left sub-tree of the left sub-tree of the critical node []

- a) RL rotation
- b) LL rotation
- c) LR rotation
- d) RR rotation

32. Which rotation is done when new node is inserted in the left sub-tree of the right sub-tree of the critical node []

- a) RL rotation
- b) LL rotation
- c) LR rotation
- d) RR rotation

33. _____ is called as ordered binary tree []

- a) AVL tree
- b) binary search tree
- c) graph
- d) sub tree

34. _____ traversal help to arrange the elements of a BST in ascending order []

- a) pre-order
- b) post-order
- c) in-order
- d) level order

35. _____ traversal also called as symmetric traversal []

- a) pre-order b) post-order c) in-order d) level order

44) M-way search tree has _____ subtrees []

a) $m-1$

b) m

c) $m+1$

d) 2

45) Binary search tree has _____ values per node []

a) 1

b) -1

c) 0

d) 2

46) B tree is a _____ way search tree []

a) M-way search tree

b) 2-way search tree

c) 1-way search tree

d) none of the above

47) A node in BST contains _____ fields []

a) 1

b) -1

c) 3

d) 2

48) If a B tree is of degree 5, then every node in B tree has at most _____ children []

a) 1

b) 5

c) 3

d) 2

49) 6-way search tree has _____ values per node []

a)5

b)6

c)7

d)2

50)All the leaf nodes in the B tree are at the same level []

a) True

b)false

Answers

1)D 11)A 21)B 31)B 41)B

2)A 12)D 22)C 32)A 42)B

3)A 13)A 23)B 33)B 43)A

4)B 14)C 24)B 34)C 44)B

5)A 15)A 25)A 35)C 45)A

6)B 16)A 26)A 36)A 46)A

7)B 17)D 27)B 37)B 47)C

8)A 18)B 28)A 38)A 48)B

9)C 19)A 29)D 39)A 49)A

10)A 20)A 30)C 40)A 50)A